CASE REPORT

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Lercanidipine-induced Chyloperitoneum in a Geriatric Patient with Peritoneal Dialysis

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Abstract

Peritoneal dialysis is one of the renal replacement therapy modality for patients with end-stage renal disease. Hypertension is a common comorbidity in these patients and calcium channel blockers are the most commonly prescribed drugs. Chyloperitoneum is a non-infectious cause of cloudy peritoneal effluent. Lercanidipine is a lipophilic, third generation calcium channel blocker and a widely used antihypertensive agent. Herein, we presented a case of geriatric peritoneal dialysis patient admitted to hospital cloudy effluent after the use of lercanidipine for hypertension. The peritoneal effluent returned to normal after after the cessation of lercanidipine.

Keywords: Chyloperitoneum, geriatrics, hypertension, lercanidipine, peritoneal dialysis

Introduction

Peritoneal dialysis (PD) is the most common type of home dialysis in which the peritoneal membrane is used to remove uremic toxins and fluid overload, especially in geriatric end-stage renal disease patients (ESRD). Chyloperitoneum is a rare condition characterized by milky peritoneal fluid containing high amounts of lymphatic fluid and triglycerides. It is important to make a differential diagnosis to rule out other possible causes. The most common causes include cancers such as lymphomas, tuberculosis, cirrhosis, lymphatic obstructions, pancreatitis, trauma, nephrotic syndrome, and drugs (1,2). Calcium channel blockers (CCBs) are the most commonly reparted among drug. In the presence of hypertension in elderly ESDR patients, CCBs are often preferred in the treatment. In this article, we present a patient with PD who was admitted to the hospital with chyloperitoneum after using lercanidipine for hypertension.

Case Report

A 78-year-old female patient with ESRD secondary to hypertensive nephrosclerosis had been receiving continuous ambulatory peritoneal dialysis (CAPD) treatment for 3 months. She was reffered our unite with cloudy peritoneal effluent (Figure 1). In her physical examination, she was oriented and cooperative, blood pressure was 150/90 mmHg, heart rate was 84 beats/minute and rhythmic, body temperature was 36.7 °C and respiratory rate was 20 per minute. There were no findings of acute abdomen. Also, the exit site of the catheter was clean. Her medications are valsartan 320 mg once a day, amlodipine 10 mg once a day, calcium acetate 700 mg three times a day, epoetin alfa 4000 IU twice a week. She has approximately 800 mL/day of urine. CAPD treatment consisted of four cycles of 2 L with 1.36% glucose solution per day. Our patient was not using icodextrin and therefore turbid waste could not bind to this dialysate component. There was no history of peritonitis, abdominal pain, fever, nausea and vomiting. Fibrin clots were not prominent and blood particles and leukocytes were not present in the effluent. Gram staining showed no features. Triglyceride concentration in peritoneal effluent was 65 mg/dL and other blood laboratory results are shown in Table 1. Routine cultures of waste dialysate were negative for bacteria, fungi and mycobacteria. No malignant cells were found in cytological examination. There were no clinical features suggestive of acute pancreatitis, solid organ malignancy, or lymphoma. Abdominal contrast-enhanced computed tomography imaging revealed a normal pancreas. The patient's laboratory results are summarized in Table 1. In her anamnesis, it was learned that the patient

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who applied to the emergency department with the complaint of irregular hypertension 3 days ago took lercadipine instead of amlodipine. This drug was suspected and stopped. After discontinuing of drug, the dialysis fluid became translucent within 24 hours.

Discussion

Hypertension is the most common comorbidity in ESRD patients. CCBs are also the most commonly prescribed antihypertensive drugs (approximately 70% of cases) in this particular patient group. CCBs use in this group is associated with a decrease in all-cause and cardiovascular mortality rates (3). Chyloperitoneum

Figure 1. Cloudy peritoneal effluent

Table 1. Laboratory results

		Normal range
White blood cell	5.07 x10^3/µL	4.6-10.2 x10$^{3/}$µL
Hemoglobin	10.9 g/dL	12.2-18.1 g/dL
Platelets	240 x10^3/µL	142-424 x10^3/µL
Urea	111 mg/dL	15-45 mg/dL
Creatinine	6.2 mg/dL	0.5-1.1 mg/dL
Sodium	139 mmol/L	136-148 mmol/L
Potassium	4.47 mmol/L	3.5-5.2 mmol/L
Calcium	9.1 mg/dL	8.5-10.6 mg/dL
Phosphorus	4.1 mg/dL	2.3-4.7 mg/dL
Albumin	3.8 g/dL	3.5-5.5 mg/dL
Cholesterol	163 mg/dL	0-200 mg/dL
Triglyceride	117 mg/dL	0-150 mg/dL
Parathormone	198.9 pg/mL	15-65 pg/mL
Ferritin	374.9 ng/mL	30-400 ng/mL
C-reactive protein	1.8 mg/L	0-6 mg/L

associated with CCBs has been previously reported on a case-by-case basis in the literature. In these publications, the use of dihydropyridine and non-dihydropyridine group CCBs was found in CCBs-related chyloperitoneum cases. While most of the cases in the literature developed chyloperitoneum in patients who received CCBs treatment for the first time, in some studies, chyloperitoneum developed when the prescribed CCBs type (4) or döşe (5) was changed.

Lercanidipine is a widely used third generation dihydropyridine type and lipophilic CCBs. Although rare, chyloperitoneum may cause development in patients receiving PD. Although the underlying mechanism of CCB-related chyloperitoneal development has not been clearly revealed, it can be explained by the deterioration of lymphatic functions that provide increased ultrafiltration and triglyceride excretion from the peritoneal membrane (6). Highly lipophilic CCBs, especially lercanidipine, easily penetrate the lipid layer of the cell membrane and act on intestinal smooth muscle cells and calcium channels in lymphatic vessels (7). Showed in a recently published systematic review that the prevalence of lercanidipine-related chyloperitoneal development is 25.97%. In addition, analyzes conducted in the study did not show a significant relationship with features such as advanced age, gender, duration of PD treatment or serum triglyceride concentrations in the development of lercanidipine-related chyloperitone (8,9).

Conclusion

In conclusion, CCBs should be considered as an important etiological factor in the development of chyloperitoneum in PD patients. In this situation, removal of the relevant drug or switching to a less lipophilic CCBs may be effective. Misconception of CCB-associated non-infectious chyloperitoneum as infectious can result in both unnecessary laboratory testing and an increase in the cost burden of inappropriate antibiotic prescriptions.

Ethics

Informed Consent: Informed consent was obtained.
Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: İ.P., F.D.Y., Ö.B., Concept: İ.P., F.D.Y., Ö.B., Design: İ.P., F.D.Y., Ö.B., Data Collection or Processing: İ.P., F.D.Y., Ö.B., Analysis or Interpretation: İ.P., F.D.Y., Ö.B., Literature Search: İ.P., F.D.Y., Ö.B., Writing: İ.P., F.D.Y., Ö.B.

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